

THE DIRECTORY OF OPEN ACCESS JOURNALS

JOURNAL OF DEGRADED AND MINING LANDS MANAGEMENT (JUN 2019)

Acid Mine Drainage (AMD): an environmental concern generated by coal mining

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DOI

<https://doi.org/10.15243/jdmlm.2019.064.1875>

Journal volume & issue

Vol. 6, no. 4
pp. 1875 – 1881

Abstract

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The impact of coal mining on the environment has been reviewed. The environmental problem generated by this activity is due to the outflow of highly acidic and heavy metals-laden water from a mine generally called Acid Mine Drainage (AMD). AMD is usually generated when a naturally occurring sulphide mineral (e.g. pyrite) is exposed to air and water during the process of mining. Upon oxidation, the sulphide decomposes to sulphuric acid which leaches out soluble metals in concentrations higher than the permissible environmental limits. Heavy metals herein refer to those with densities greater than 5g/cm³ and can be injurious to aquatic life of downstream waters and food crops planted on

soils around the mine which when consumed leads to severe health cases like cancer, high blood pressure and a host of others. This article brings to bear an introduction to the AMD problem, the chemistry behind it, factors that influence its formation, its severity, cost of treatment/mine reclamation, selected impacted areas, a conclusion and an array of recommendations for action. The authors are persuaded that this article would further contribute to the knowledge base of this global environmental phenomenon not just for the purpose of learning but also as a contribution to the realisation of the United Nations Sustainable Development Goals (SDGs-6) of “clean water and sanitation”.

Keywords

- AMD

- coal

- concern

- environmental

- mining

Published in *Journal of Degraded and Mining Lands Management*

ISSN

2339-076X (Print)

2502-2458 (Online)

Publisher

University of Brawijaya

Country of publisher

Indonesia

LCC subjects

Technology: Environmental technology. Sanitary engineering: Environmental effects of industries and plants

Website

<http://www.idmlm.ub.ac.id>

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